

First records of *Callaspidia defonscolombei* Dahlbom, 1842 (Hymenoptera, Cynipioidea, Figitidae) in an urban environment in Colombia

Esteban Tulande-M., Juliana Durán-Prieto

Subdirección Científica, Jardín Botánico de Bogotá “José Celestino Mutis”, Avenida Calle 63 No. 68-95, Bogotá D.C., Colombia
Corresponding author: Esteban Tulande-M., etulandem@gmail.com

Abstract

Callaspidia defonscolombei Dahlbom, 1842, is a figitid wasp with a widespread distribution. In South America, it has been reported from Argentina, Brazil, and Chile. Here we report the first record of this species in Colombia, where it was associated with two species of trees in urban parks of Bogotá. We also report the presence of unknown pollen in the examined individuals. Future studies need to be conducted to identify the local impact of this species as a possible parasitoid and/or pollinator in the green spaces of the city of Bogotá.

Keywords

Bogotá D.C., city tree species, introduced species, *Lafoensia acuminata*, *Quercus humboldtii*

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Introduction

The figitid genus *Callaspidia* Dahlbom, 1842 is currently composed of five species (Ros-Farre and Pujade Villar 2009) distributed in the Holarctic Region (Europe and Asia), except for *Callaspidia defonscolombei* Dahlbom, 1842, which has a widespread distribution in Argentina, Brazil, Chile, Canada, and USA. However, it is believed that it was probably introduced to North and South America (Ros-Farre and Pujade Villar 2009). The mechanisms by which this species has reached this wide distribution are yet unknown. In South America, *C. defonscolombei* is recorded in Argentina, Brazil, and Chile from specimens collected outside of urban areas below 500 m elevation. Before our study, *C. defonscolombei* had never been found in Colombia. Here we record for the first time the presence of this species in tropical South America and

Colombia, in an urban environment in Bogotá at 2600 m above sea level. There it was associated with two species of tree found in urban parks. We also discuss the possible ecological roles that *C. defonscolombei* might play in the city of Bogotá.

Methods

Our study was carried out in the city of Bogotá (04° 36'35"N, 074°04'54"W), the capital of Colombia, and located in the eastern Andes at 2,600 m above sea level. The city's climate is characterized by an average annual temperature between 12 and 16 °C and precipitation between 1500 and 2000 mm (SDA-CI 2010; IDEAM 2015). During entomological monitoring carried out in March 2018 and April 2019, 60 individuals of two

species of tree, *Lafoensia acuminata* (Ruiz and Pav.) DC. (Lythraceae) and *Quercus humboldtii* Bondp. 1805 (Fagaceae), were sampled using an entomological net and aspirator. The trees are widely distributed in urban green parks of Bogotá. Specimens of *C. defonscolombeii* were found in two of these samples. Specimens were identified using identification keys by Ros-Farre and Pujade Villar (2009). One of the specimens was stored in ethanol (75%) and the other specimen was dried, mounted, and prepared for photography. Stacks of photographs were taken using a Zeiss Discovery V.12 stereomicroscope. High-resolution photographs of diagnostic characters were sent to Dr Juli Pujade-Villar, who confirmed the identification. The collected specimens were deposited in the Museo Javeriano de Historia natural “Lorenzo Uribe S.J.” (MPUJ_ENT). We follow the morphological terminology of Ros-Farre and Pujade Villar (2009).

Results

Callaspidia defonscolombeii Dahlbom, 1842

For synonyms, see Ros-Farre and Pujade Villar (2009).

New records (Fig. 1). COLOMBIA • 1 ♂; Cundinamarca, Bogotá D.C., Localidad Kennedy, Urban Park Lago Timiza; 04°36'27"N, 074°09'09"W; WGS84; 2600 m a.s.l.; April 2019; Esteban Tulande-M, Sergio A.



Figure 1. Location of the specimens of *Callaspidia defonscolombeii* in the city of Bogotá D.C., Colombia. Photograph: Kristian Rubiano.

Vargas leg.; collected in a tree of *Lafoensia acuminata* (Ruiz and Pav.) DC. (Lythraceae); MPUJ_ENT 0064133. • 1 ♂; Cundinamarca, Bogotá D.C., Localidad Usaquén, Urban park Nueva autopista; 05°10'25"N, 073°57'10"W, WGS84; 2600 m a.s.l.; March 2018; Juliana Durán-Prieto, Valentina Ocampo leg.; collected in a tree of *Quercus humboldtii* Bondp. 1805 (Fagaceae); MPUJ_ENT 0064134.

Observational notes. Both specimens had clumps of pollen trapped in the scutellar longitudinal carinae, in the pronotal longitudinal carinae, and the occipital carinae; remnants can be seen in Figures 2B, D, and E. The pollen has not been identified yet but has been properly preserved in a slide mount.

Identification. *Color.* Head black, mesosoma black, basal third and parascutal sulcus reddish; pronotum black, lighter anteriorly. *Metanotum.* Medium brown (Fig. 2A). *Head.* Frons transversely carinated, slightly coriaceous, frontal carina present, complete and wide (Fig. 2B). Lateral frontal carina slightly curved, prominent, and slightly alutaceous; space between it and eye alutaceous, with noticeable transverse carinae. Vertex shining to weakly coriaceous, with two cells. Gena weakly angled, slightly expanded, with conspicuous transverse carinae, weakly alutaceous. Occiput shining with transverse carinae. *Mesosoma.* Lateral surface of pronotum coriaceous with uniform, irradial, wide, and spaced carinae. *Mesoscutum.* Coriaceous, transversely carinated with carinae straight and uniform between notauli (Fig. 2C), slightly disordered and less conspicuous laterally. *Notauli.* Hardly widened basally, inside with some conspicuous transversal carinae and alutaceous. Median mesoscutal furrow much wider than the base of notauli with same interior sculpture than notauli. Parascutal sulcus with transverse carinae, shining. Antero-admedial lines slightly prominent and generally thin, alutaceous dorsally. Median ridge alutaceous dorsally and thicker than antero-admedial lines. *Mesonotum.* In lateral view, simply curved, with no inflections. Interfoveal carina, in lateral view, slightly above the level of lateral margins of scutellum, or at the same level than these, which are slightly confluent (Fig. 2D). Propodeal carinae (Fig. 2E) slightly curved externally, internally very slightly curved, internal area coriaceous with occasional blunt transversal carinae. *Wings.* R2 slightly curved; R1 absent, hyaline. Veins of areolet not visible.

Callaspidia defonscolombeii is morphologically very similar to *C. dahlbomi*; both species have transverse carinae on the lateral face of pronotum and scutum. In both species the frons is very rugose or carinated, but in *C. defonscolombeii* the central area of the propodeum is not transversely carinated like in *C. dahlbomi*, and the propodeal carinae are never divergent (Ros-Farre and Pujade-Villar 2009).

Discussion

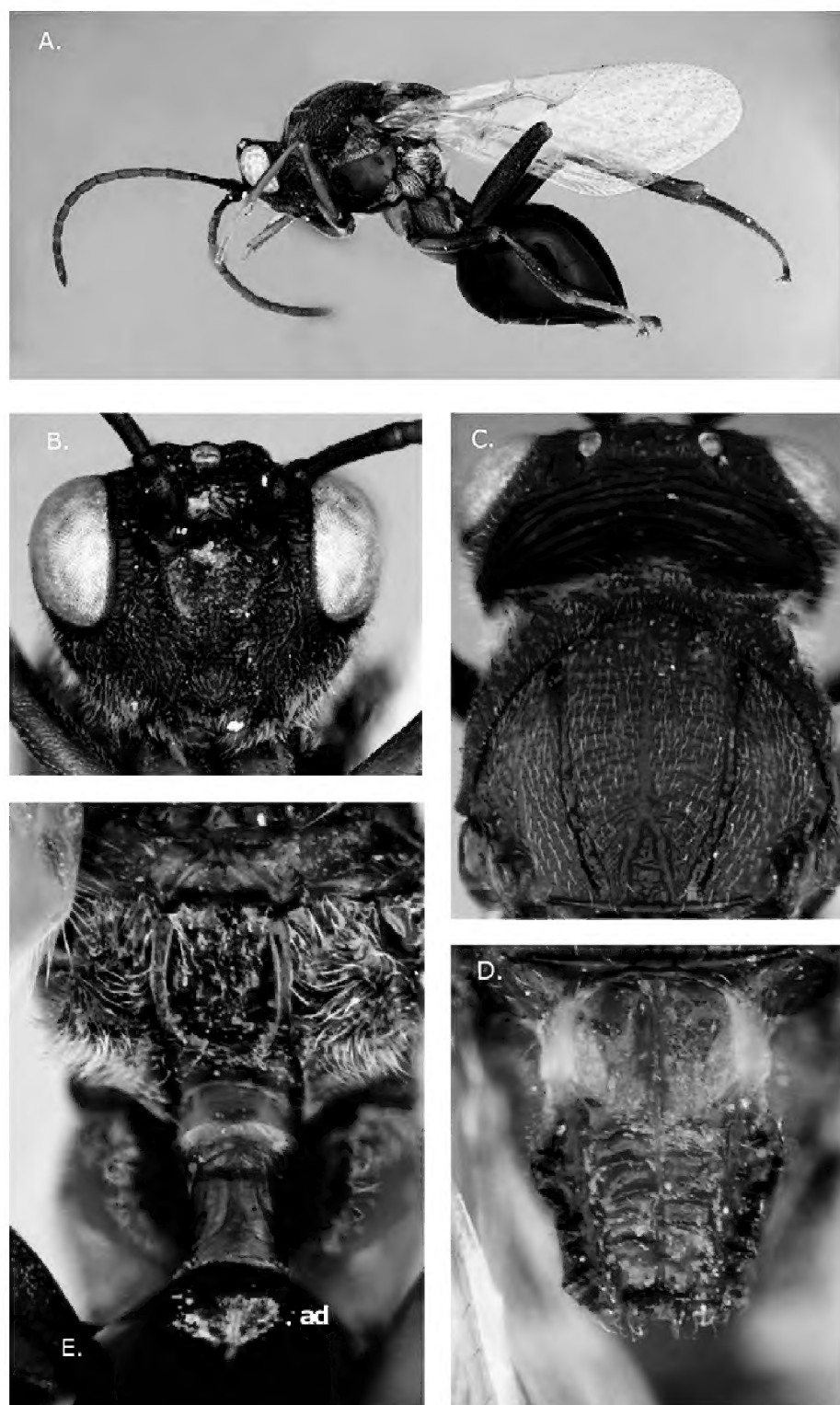


Figure 2. *Callaspidia defonscolombei* (MPUJ_ENT 0064133). **A.** habitus. **B.** Head frontal. **C.** Mesonotum. **D.** Scutellum. **E.** Propodeum and third abdominal segment with a depressed patch of hair (ad).

The new records of *C. defonscolombei* represent the first report of the genus *Callaspidia* Dahlbom, 1842 and species in Colombia, and the geographic range of *C. defonscolombei* in South America is expanded. Our finding of pollen of an unknown plant species on the body of our specimens of *C. defonscolombei* is remarkable because there are no previous reports in the literature about the role of *C. defonscolombei* as plant-pollinator. According to Rotheray (1979), Ros-Farré and Pujade Villar (2009), and Pujade-Villar et al. (2011), *C. defonscolombei* is a parasitoid attacking the pupal stages of diverse species of syrphids (Diptera). Syrphids of the genus *Eupeodes* Osten Sacken, 1877 and *Syrphus* Fabricius, 1775, which are found in *Corylus avellana* Linnaeus trees (Betulaceae), are reported as hosts of *C. defonscolombei* (Pujade-Villar et al. 2011). Although we did not record the host of this figitid species in the study area, in Colombia syrphids are ubiquitous in diverse ecosystems (Gutierrez et al. 2005). In Bogotá, Zamora-Carrillo et al. (2011) reported the presence of syrphids (including

a species of *Syrphus*) in the Bogotá Botanical Garden where they were associated with the native shrub *Salvia bogotensis* Benth (Lamiaceae). Syrphids in their larval stage are natural predators of aphids, which are abundant among the exotic and native urban flora of Bogotá (Simbaqueba et al. 2016). Future studies are needed to identify the local impact of this species as a parasitoid of syrphids and/or pollinator of plants in urban green spaces of the city of Bogotá.

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Authors' Contributions

ETM collected one specimen, made the species initial identification, later confirmed the identification with a specialist, and wrote the original draft; JDP collected another specimen and wrote on the final draft.

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